

October 4, 1949.

Dr. I. D. Michelson,
Institute of Pathology,
University of Tennessee,
Memphis, Tennessee.

Dear Dr. Michelson:

Some months ago, I wrote to Dr. Dulaney concerning the *E. coli*-mutabile strains on which Dr. Deere worked for his Ph. D. thesis a decade ago. I was sorry to hear that the strains had not been maintained.

I am especially sorry, now, that this was the case, because I believe now that a more complete explanation can be found for the contradictory presence of lactase in lactose-nonfermenters. Using new assay methods, it can be shown that the lactase activity even of intact, lactose-adapted, lactose-fermenting cells is as low as 4-5% of the total lactase activity that can be demonstrated in preparations which have been vacuum dried, or treated with thymol or caprylic alcohol. Intact cells of lactose-negative strains, or of lactose-positive cultures grown on glucose are only a few percent as active as those of adapted lactose-positives. Treatment with antiseptics causes the same proportionate "activation" of the enzyme in each of these types of cells. From this, I would conclude that there is a considerable difference in enzyme content in unadapted or in lactose-negative cultures, but that in each case only a small fraction of the total potential activity is actually functioning. The new datum which justifies this conclusion is, of course, that lactose-adapted cells can also be "activated" by drying or with antiseptics, which was not available before owing to limitations of method.

It would be especially desirable now, I think, to repeat these observations on the "Garrett" strain. Do you believe that it would be worthwhile to ask Dr. Deere whether the strain had ever been sent elsewhere? I will be glad to write directly if you will give me his address. If the strain had ever been sent out, might it be worthwhile to advertise in the SAB newsletter?

Finally, I would appreciate it if I could have reprints of these studies on lactase, if any should still be available.

Yours sincerely,

Joshua Lederberg
Assistant Professor of Genet/